# DOD HFE SubTAG Report

Purpose of sub TAG report:
The purpose of the sub TAG report is to inform the Department of Defense Human Factors Engineering Technical Advisory Group (DOD HFE TAG) membership of the activities of the sub TAG and the major areas of concern being discussed and addressed.

## General Information:

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|---|---|
| SubTAG Name | Design: Tools and Techniques |
| Date and Number of the DOD HFE TAG **(i.e. TAG 66, 10/25/2011)** | TAG-68,05/22/2014 |
| Number of Attendees at SubTAG session | 18 |
| Organizations Represented (Agencies and/or organizations that employee members at the SubTAG) | Boeing, Dept of Homeland Security, NASA Ames Research Center, US Army ARL HRED, US Army Yuma Proving Ground, NSWC Dahlgren, NAWC-TSD, BCI, SimVentions, HQ Air Force Recruiting Service ARL HRED, |

| SubTAG Chair's Name | SubTAG Chair's Organization | SubTAG Chair's Phone and Address |
|---|---|---|
| Stephen C. Merriman | The Boeing Company | (972) 344-2017<br>The Boeing Company<br>13510 Central Expressway<br>Mail Station 269<br>Dallas, TX 75243<br>(972) 344-2017; FAX (972) 344-7145<br><br>Stephen.c.merriman@boeing.com |
| SubTAG Co-Chair's Name | SubTAG Co-Chair's Organization | SubTAG Chair's Phone and Address |
| Michael S. Feary | NASA Ames | NASA Ames Research Center<br>MS262-4, P.O. Box 1<br>Moffett Field, CA 94035<br>(650) 604-0203<br>michael.s.feary@nasa.gov |
| SubTAG Co-Chair's Name | SubTAG Co-Chair's Organization | SubTAG Chair's Phone and Address |
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## AGENDA

## Presentations and Panels (If none, state none).

| Title of Presentation | Name of Presenter | Name of Agency or Organization Employing Presenter | Overview of Presentation (e.g., Paste Abstract Here or Generate a Brief Summary) |
|---|---|---|---|
| ***Objective, Quantifiable Measurement Tool to Measure On-display Image Quality*** | Ms. Katrin Helbing | Department of Homeland Security/TSA | An inherent component of aviation security is the transportation security officers' (TSOs) ability to detect potential threats in carryon and checked baggage. TSOs review displayed X-ray (2D) and CT (3D) images of passenger's bags. Visual inspection of these images plays a large part in the security effectiveness. There are currently no objective methods to quantify X-ray or computed tomography (CT) image quality for both fixed and moving images as they apply to security screening. Key research goals include:<br>• Use of COTS hardware with custom algorithms to develop a robust image quality measurement system for use on fixed and dynamic X-ray and CT imagery.<br>• Development of novel edge-based image measures for effectively describing complex structures in X-ray imagery to objectively quantify image quality.<br>• Development of techniques for robustly modeling the relationship between functional image quality ratings and human performance; tie metrics to X-ray threat detection performance. |
| ***Mission Task Analysis Tool (MTAT*** | Mr. Matt Wilson | SimVentions, Inc. | The MTAT is a software-based tool that supports individuals and teams conducting task analyses. It provides an integrated workspace that pulls together the various contributors to the task analysis. MTAT consists of five modules: mission analysis, function analysis, function allocation, task analysis and resource analysis. The MTAT tool has been used to evaluate different versions of the F/A-18 aircraft. The tool can generate an export file for IMPRINT. |
| ***Jack Library of Postures and Motions*** | Mr. Charles Dischinger | NASA Marshall Space Flight Center | Many NASA design projects use digital human anthropometric models in the development of worksites, including for ground processing of launch vehicles. |

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| | | | Marshall Space Flight Center (MSFC) primarily uses Siemens Jack (Jack) for this sort of design analysis for the Space Launch System (SLS). The SLS and other Launch Vehicles (LV) must be designed for human tasks associated with vehicle assembly and maintenance tasks at the launch site. Analysts have identified difficulties with achieving naturalistic postures and motions for the digital human model (DHM). Because the commercial tool lacks behaviors appropriate to earth gravity, the DHM does not automatically assume postures that humans solve naturally; e.g., for lifting a heavy object or stepping through a hatch. Attempts by analysts to position the DHM and to have it perform the series of postures associated with the task (lift or step up and over, for example) are time-consuming and often unsuccessful. The project described in this paper integrated motion capture technologies with the Jack virtual modeling tool to create a library of postures and motions that can be imported into the virtual environment and used to assess various human factors aspects of LV worksite designs. This presentation discussed the process for data collection and importation to Jack models, as well as the method of applying the model "behavior primitives," as they are called, to worksite analysis. The Jack postures are available via DVD though Mr. Dischinger at NASA. |

******Please provide the briefing to the TAG coordinators for posting on the DTIC hosted TAG website, if the briefing is unclassified and cleared, via the provided CD******

## Issues and Concerns (If none exist, state none)

| Title of Concern or Problem | Advocate or Organization That Raised Issue | Group Discussion Summary Related to Topic | Actions, if any to be taken |
|---|---|---|---|
| NONE | | | |
| | | | |

## Elections (If none held, state none)

| Position Being Filled | Current Person | Current Agency/Organization | Candidates Nominated (Name/Agency- | Final Sub TAG Selection (Based on Voting) |
|---|---|---|---|---|

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|---|---|---|---|---|
| | | | Organization) | |
| Chair Elect | Chelsey Lever | US Navy | NSWC Dahlgren | TBD |
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******Please also provide the new individuals contact information so the TAG Operating Board roster can be updated******

## Open Actions (If none exist, state none)

| Title of Concern or Problem | Advocate or Organization That Raised Issue | Group Discussion Summary Related to Topic | Actions, if any to be taken |
|---|---|---|---|
| NONE | | | |
| | | | |

## Does your SubTAG intend to meet at the next scheduled TAG?

Yes XX No ☐

Additional Comments:
NONE_____
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